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# METHOD AND SYSTEM FOR CREATING MAIL RULES FROM EXISTING MAIL

## CROSS REFERENCE TO RELATED APPLICATION

The present invention is related to an application

5 entitled METHOD AND SYSTEM FOR MODIFYING MAIL RULES,

serial no. _____, attorney docket no.

RSW9-2000-0065-US1 all of which are filed even date

hereof, assigned to the same assignee, and incorporated

herein by reference.

## 1. Field of the Invention:

10 The present invention relates generally to an

improved data processing system and in particular to a

method and apparatus for processing electronic messages.

Still more particularly, the present invention provides a

15 method and apparatus for creating rules for processing

electronic messages.

## 2. Background of the Invention:

The Internet, also referred to as an "internetwork",

is a set of computer networks, possibly dissimilar,

20 joined together by means of gateways that handle data

transfer and the conversion of messages from the sending

network to the protocols used by the receiving network

(with packets if necessary). When capitalized, the term

"Internet" refers to the collection of networks and

25 gateways that use the TCP/IP suite of protocols.

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The Internet has become a cultural fixture as a source of information, entertainment, and communications. Many businesses are creating Internet sites as an integral part of their marketing efforts, informing

5 consumers of the products or services offered by the business or providing other information seeking to engender brand loyalty. Many federal, state, and local government agencies are also employing Internet sites for informational purposes, particularly agencies which must

10 interact with virtually all segments of society such as the Internal Revenue Service and secretaries of state. Providing informational guides and/or searchable databases of online public records may reduce operating costs. Further, the Internet is becoming increasingly

15 popular as a medium for commercial transactions.

In addition to being a source of information, the Internet also provides a communications medium. The Internet has become the most popular computer network used by consumers and businesses to send and receive

20 electronic mail, also referred to as "e-mail". The Internet allows users to readily send and receive e-mail to and from computers around the world. Each user typically has a unique Internet e-mail address (e.g., steve@ibm.com). A user with an e-mail account and a

25 computer capable of connecting to the Internet can easily send and receive e-mail over the network.

E-mail allows a person to quickly and easily send textual messages and other information, such as, for example, pictures, sound recordings, and formatted

30 documents electronically to other e-mail users anywhere

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in the world. An e-mail user will typically create a
message using an e-mail program running on a computer
connected to a computer network through a modem. The
message will include an e-mail "address" for the intended

5    recipient. When the user has finished entering the
message, the user may "send" the message to the intended
recipient. The e-mail program then electronically
transmits the message over the computer network. The
recipient, using an e-mail program running on the

10    recipient's computer, can then "receive" the message.

When receiving messages, the messages are typically
placed in an "inbox" from which the recipient can view
the messages. Additionally, some e-mail programs allow a
user to set up rules for intercepting messages intended

15    for them and acting upon the message via a "mail" rule.
For example, a user may set up a rule to direct any mail
received from a particular sender to be automatically
placed into a particular folder. Many e-mail programs
allow the users to define rules to perform actions on

20    incoming messages. For example, the rule may perform a
selected action based on the content of a mail header or
the specific content of the message. In another example,
the user may direct any mail received containing a
selected phrase in the body of a message to be

25    automatically deleted. Currently available e-mail
programs provide a user interface for the user to compose
rules for use in filtering and processing messages.
These interfaces are sometimes confusing and complicated
for users. Currently, the rules are typically created

30    manually through a dialog or series of dialogs in which a

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user defines the rule, what conditions must be present
for the rule to take effect, and the resulting action.
As a result, some users do not use rules to filter and
process messages.

5        Therefore, it would be advantageous to have an
improved method and apparatus for creating rules used in
processing incoming messages.

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## SUMMARY OF THE INVENTION

The present invention provides a method in a data processing system for creating rules to process electronic messages. The mechanism of the present
5   invention is used in the instances in which a rule is absent. User input is detected moving an electronic message into a folder. In response to this user input, the characteristics of the electronic message is used to generate a new mail rule. If other messages exist in the
10  folder and the user has selected these other messages, the characteristics of the new message are compared with other electronic messages in the folder to form a comparison. A rule for processing the electronic message is then generated based on the comparison.

15      The generated rule is presented for acceptance or modification by the user. If the user accepts the rule, the rule is saved. The user may modify the rule or cancel creation of the rule. In modifying an existing rule, the mechanism of the present invention may present
20  new conditions for the rule if the rule presented to the user is unacceptable. With messages already present in the folder, commonality between the electronic message being moved into the folder and the other messages present in the folder (upon which the existing rule is
25  based) is used to select conditions for generating the rule. Further, new rules may be generated for actions other than moving a message into a folder. For example, rules may be generated under the mechanism of the present

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invention for actions such as deleting or forwarding the electronic message.

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## BRIEF DESCRIPTION OF THE DRAWINGS

The novel features believed characteristic of the invention are set forth in the appended claims. The invention itself, however, as well as a preferred mode of
5   use, further objectives and advantages thereof, will best be understood by reference to the following detailed description of an illustrative embodiment when read in conjunction with the accompanying drawings, wherein:

**Figure 1** depicts a pictorial representation of a
10   distributed data processing system in which the present invention may be implemented;

**Figure 2** is a block diagram of a data processing system that may be implemented as a server in accordance with a preferred embodiment of the present invention;
15   **Figure 3** is a block diagram illustrating a data processing system in which the present invention may be implemented;

**Figure 4** is a block diagram of an e-mail program in accordance with a preferred embodiment of the present
20   invention;

**Figures 5A-5C** are diagrams illustrating a process for making and using a rule in accordance with a preferred embodiment of the present invention;

**Figure 6** is a diagram illustrating an example
25   interface used to present a rule to a user in accordance with a preferred embodiment of the present invention; and

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     **Figure 7** is a flowchart of a process used for generating a rule based on user manipulation of an electronic message in accordance with a preferred embodiment of the present invention.

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## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference now to the figures, **Figure 1** depicts a pictorial representation of a distributed data processing system in which the present invention may be implemented.

5 Distributed data processing system **100** is a network of computers in which the present invention may be implemented. Distributed data processing system **100** contains a network **102**, which is the medium used to provide communications links between various devices and

10 computers connected together within distributed data processing system **100**. Network **102** may include permanent connections, such as wire or fiber optic cables, or temporary connections made through telephone connections.

In the depicted example, a server **104** is connected to

15 network **102** along with storage unit **106**. In addition, clients **108**, **110**, and **112** also are connected to network **102**. These clients **108**, **110**, and **112** may be, for example, personal computers or network computers. For purposes of this application, a network computer is any computer,

20 coupled to a network, which receives a program or other application from another computer coupled to the network. In the depicted example, server **104** provides data, such as boot files, operating system images, and applications to clients **108-112**. Clients **108**, **110**, and **112** are clients to

25 server **104**. In the depicted examples, server **104** may contain an electronic mail system from which clients **108**, **110**, and **112** send and receive e-mail messages through e-mail programs or applications located on the clients.

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Distributed data processing system **100** may include
additional servers, clients, and other devices not shown.
For example, messages may be sent and received between
server **104** and other servers (not shown) to distribute

5 and receive messages from other clients (not shown).

In the depicted example, distributed data processing
system **100** is the Internet with network **102** representing a
worldwide collection of networks and gateways that use the
TCP/IP suite of protocols to communicate with one another.

10 At the heart of the Internet is a backbone of high-speed
data communication lines between major nodes or host
computers, consisting of thousands of commercial,
government, educational and other computer systems that
route data and messages. Of course, distributed data

15 processing system **100** also may be implemented as a number
of different types of networks, such as for example, an
intranet, a local area network (LAN), or a wide area
network (WAN). **Figure 1** is intended as an example, and not
as an architectural limitation for the present invention.

20 Referring to **Figure 2,** a block diagram of a data
processing system that may be implemented as a server,
such as server **104** in **Figure 1,** is depicted in accordance
with a preferred embodiment of the present invention. In
the depicted examples, data processing system **200** is used

25 as an electronic mail message server providing service to
a number of different clients.

Data processing system **200** may be a symmetric
multiprocessor (SMP) system including a plurality of
processors **202** and **204** connected to system bus **206.**

30 Alternatively, a single processor system may be employed.

Also connected to system bus **206** is memory controller/cache **208,** which provides an interface to local memory **209.** I/O bus bridge **210** is connected to system bus **206** and provides an interface to I/O bus **212.** Memory

5 controller/cache **208** and I/O bus bridge **210** may be integrated as depicted.

Peripheral component interconnect (PCI) bus bridge **214** connected to I/O bus **212** provides an interface to PCI local bus **216.** A number of modems may be connected to PCI

10 bus **216.** Typical PCI bus implementations will support four PCI expansion slots or add-in connectors. Communications links to network computers **108-112** in **Figure 1** may be provided through modem **218** and network adapter **220** connected to PCI local bus **216** through add-in

15 boards.

Additional PCI bus bridges **222** and **224** provide interfaces for additional PCI buses **226** and **228,** from which additional modems or network adapters may be supported. In this manner, data processing system **200**

20 allows connections to multiple network computers. A memory-mapped graphics adapter **230** and hard disk **232** may also be connected to I/O bus **212** as depicted, either directly or indirectly.

Those of ordinary skill in the art will appreciate

25 that the hardware depicted in **Figure 2** may vary. For example, other peripheral devices, such as optical disk drives and the like, also may be used in addition to or in place of the hardware depicted. The depicted example is not meant to imply architectural limitations with respect

30 to the present invention.

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The data processing system depicted in **Figure 2** may be, for example, an IBM RISC/System 6000 system, a product of International Business Machines Corporation in Armonk, New York, running the Advanced Interactive Executive (AIX)
5  operating system.

With reference now to **Figure 3**, a block diagram illustrating a data processing system in which the present invention may be implemented. Data processing system **300** is an example of a client computer. In these examples,
10  data processing system **300** may include any mail program or application for generating, sending, and receiving messages.

Data processing system **300** employs a peripheral component interconnect (PCI) local bus architecture.
15  Although the depicted example employs a PCI bus, other bus architectures such as Accelerated Graphics Port (AGP) and Industry Standard Architecture (ISA) may be used. Processor **302** and main memory **304** are connected to PCI local bus **306** through PCI bridge **308**. PCI bridge **308** also
20  may include an integrated memory controller and cache memory for processor **302**. Additional connections to PCI local bus **306** may be made through direct component interconnection or through add-in boards. In the depicted example, local area network (LAN) adapter **310**, SCSI host
25  bus adapter **312**, and expansion bus interface **314** are connected to PCI local bus **306** by direct component connection. In contrast, audio adapter **316**, graphics adapter **318**, and audio/video adapter **319** are connected to PCI local bus **306** by add-in boards inserted into expansion
30  slots. Expansion bus interface **314** provides a connection

for a keyboard and mouse adapter **320**, modem **322**, and additional memory **324**. Small computer system interface (SCSI) host bus adapter **312** provides a connection for hard disk drive **326**, tape drive **328**, and CD-ROM drive **330**.

5    Typical PCI local bus implementations will support three or four PCI expansion slots or add-in connectors.

An operating system runs on processor **302** and is used to coordinate and provide control of various components within data processing system **300** in **Figure 3**. The
10   operating system may be a commercially available operating system, such as Windows 2000, which is available from Microsoft Corporation. An object oriented programming system such as Java may run in conjunction with the operating system and provides calls to the operating
15   system from Java programs or applications executing on data processing system **300**. "Java" is a trademark of Sun Microsystems, Inc. Instructions for the operating system, the object-oriented operating system, and applications or programs are located on storage devices, such as hard disk
20   drive **326**, and may be loaded into main memory **304** for execution by processor **302**.

Those of ordinary skill in the art will appreciate that the hardware in **Figure 3** may vary depending on the implementation. Other internal hardware or peripheral
25   devices, such as flash ROM (or equivalent nonvolatile memory) or optical disk drives and the like, may be used in addition to or in place of the hardware depicted in **Figure 3**. Also, the processes of the present invention may be applied to a multiprocessor data processing
30   system.

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For example, data processing system **300**, if
optionally configured as a network computer, may not
include SCSI host bus adapter **312**, hard disk drive **326**,
tape drive **328**, and CD-ROM **330**, as noted by dotted line

5    **332** in **Figure 3** denoting optional inclusion.  In that
case, the computer, to be properly called a client
computer, must include some type of network communication
interface, such as LAN adapter **310**, modem **322**, or the
like.  As another example, data processing system **300** may

10   be a stand-alone system configured to be bootable without
relying on some type of network communication interface,
whether or not data processing system **300** comprises some
type of network communication interface.  As a further
example, data processing system **300** may be a Personal

15   Digital Assistant (PDA) device, which is configured with
ROM and/or flash ROM in order to provide non-volatile
memory for storing operating system files and/or user-
generated data.

The depicted example in **Figure 3** and above-described

20   examples are not meant to imply architectural
limitations.  For example, data processing system **300**
also may be a notebook computer or hand held computer in
addition to taking the form of a PDA.  Data processing
system **300** also may be a kiosk or a Web appliance.

25   The present invention provides a method, apparatus,
and computer implemented instructions for creating rules
for processing electronic messages.  The mechanism of the
present invention creates a new rule based on user input
manipulating electronic messages.  For example, to create

30   a new rule that would move specific electronic messages

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into a specific folder, the user moves an existing
electronic message with the desired characteristics in
the folder.  Then, the user selects or multiselects the
electronic message or messages placed into the folder and
5    initiates an action to make a rule.  This initiation may
be accomplished in a number of ways, such as, for
example, a menu choice, a toolbar button, or a pointer
menu.  The mechanism of the present invention parses
through the selected message or messages and looks for
10   commonality or specific characteristics.  When complete,
the user is presented with the result of the comparison.
If the comparison yields a condition of commonality, a
rule based on these results is generated and presented to
the user.  The user may then name and accept the new
15   rule.  If no clear condition of commonality is present, a
series of options based on selected criteria is presented
to the user.

        For example, the user creates a folder entitled
"From Joe" and the user drags existing electronic
20   messages from Joe into this folder.  Then, the messages
are selected and the user initiates the mechanism of the
present invention to make a rule.  The messages are
parsed and, in this example, the commonality between the
messages is the address of the sender, joe@ibm.com.  The
25   user is presented with a dialog asking to confirm a new
rule to move all messages from the sender, joe@ibm.com,
into the folder "From Joe".  If the user confirms the
rule, the rule is then saved.  Otherwise, the user may
make modifications to the rule if desired or discard the
30   rule.

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Turning next to **Figure 4**, a block diagram of an e-mail program is depicted in accordance with a preferred embodiment of the present invention. E-mail program **400** in this example includes a message processing unit **402**

5 which processes messages, such as electronic message **404**, created and received by the user. Message processing unit **402** may be implemented by using currently available mail systems, such as Lotus Notes or CC Mail, which are available from Lotus Development Corporation. If

10 electronic message **404** is an electronic message received by message processing unit **402**, the electronic message may be stored in storage **406**.

Mail program **400** also includes mail displayer **408**, which is a graphical user interface (GUI) that is used to

15 display electronic message **404**. If the user edits or generates an electronic message, these functions may be accomplished through mail editor **410**. Electronic messages may be placed into different folders in storage **406** by message processing unit **402** using filter **412**.

20 Filter **412** identifies actions to perform upon electronic messages based on the content in the messages and rules **414**. Rules **414** include rules such as those for routing messages to various folders as well as taking other actions, such as forwarding or deleting electronic

25 messages. Further, mail program **400** includes a rules module **416**, which is an example of where the processes of the present invention may be implemented. In particular, rules module **416** will identify user actions upon an electronic message, compare the electronic message

30 against criteria to generate a rule. The rule is then

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presented to the user for acceptance or modification.
The criteria may be preselected criteria if the action on
the electronic message is a movement of the electronic
message into a folder. Further, the user may select

5  other messages, if present in the folder, such that these
messages are used in generating the new rule. In such a
case, the mechanism of the present invention searches for
a commonality within all of the selected messages and the
message that is moved into the folder.

10  Alternatively, the criteria may be based on content
in selected portions of the electronic message or whether
selected content is present in the electronic message.
For example, the criteria may be to select the sender's
address for use in generating a rule with the subject

15  matter of the message being the second option for use in
generating the rule. Also, if certain words are present
between multiple messages, these words may be used in
generating the rule. The time and date in the electronic
message is an example of another criteria. Any

20  information in the electronic message may be used. Some
criteria may be given priority over other criteria, using
a priority rule depending on the implementation. The
commonality may be priority-based in which commonality in
the sender's address is searched for before commonality

25  of the subject of the message.

Turning next to **Figures 5A-5C**, diagrams illustrating
a process for making and using a rule are depicted in
accordance with a preferred embodiment of the present
invention. Incoming mail **500** may be placed into mail

30  folders entitled "Inbox" **502**, "From Joe" **504**, and "From

Dan" **506** using various routing rules, such as rule **508**.
In this example, the user initiates generation of rule
**508** by creating the folder "From Joe" **504**. The user then
selects electronic message **510** in folder "Inbox" **502** and

5    places that electronic message in folder "From Joe" **504**.
The mechanism of the present invention analyzes the
electronic message and proposes or displays a rule to the
user that will take incoming mail with the header "From"
that equals "joe@ibm.com" and places that electronic

10   message in folder "From Joe" **504**.

In **Figure 5B**, rule **508** has been accepted by the user
and is stored as a routing rule.  This rule may be stored
in rules **414** in **Figure 4**.  This routing rule takes all
messages having a header "From" that equals "joe@ibm.com"

15   and places the electronic message in folder **504** entitled
"From Joe".  In **Figure 5C**, an incoming message **512** is
received.  In this example, the content in the header
"From" is "joe@ibm.com".  Using rule **508**, electronic
message **512** is placed into folder "From Joe" **504**.

20   In this manner, the user is not required to navigate
numerous dialog boxes to generate a rule.  The rule is
generated based on the existing mail and the user's
input.  The user then is able to accept the rule, modify
it, or cancel it.

25   Turning next to **Figure 6**, a diagram illustrating an
example interface used to present a rule to a user is
depicted in accordance with a preferred embodiment of the
present invention.  Rule dialog **600** is an example of a
dialog used to present a rule to a user based on the

30   sequence of actions taken by a user in **Figures 5A-5B**.

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Dialog **600** presents a rule in section **602** to the user based on the user's actions in moving electronic mail message **510** from the folder "Inbox" **502** to the folder "From Joe" **504**. The user may accept this proposed rule

5    by selecting "OK" button **604**, which causes the rule to be saved. Alternatively, the user may modify the rule by selecting alternatives such as the subject or content as presented by selections **606-610** in dialog **600**. After selecting one or more of these selections, a new rule may

10    be generated by selecting "Apply" button (or similar device) **612**. A new rule will then be presented to the user for viewing. If the user decides not to use the rule, the rule may be discarded by selecting "Cancel" button **614**.

15       Turning next to **Figure 7**, a flowchart of a process used for generating a rule based on user manipulation of an electronic message is depicted in accordance with a preferred embodiment of the present invention. The process illustrated in **Figure 7** may be implemented in

20    rules module **416** in **Figure 4**. In this example, the process is initiated by the user selecting a menu or graphical control indicating that a new rule should be generated.

      The process begins by receiving user input to

25    manipulate the electronic message (step **700**). In the depicted examples, the manipulation may take various forms, such as, for example, moving the electronic message from one folder to another folder, deleting the electronic message, or forwarding the electronic message.

30    Next, an action on the electronic message is performed

based on the user input (step **702**). A determination is then made as to whether the user has selected other electronic messages (step **704**). If the user has selected other messages in addition to the electronic message on

5   which the action has been taken, the electronic message is parsed using priority-based common fields and content (step **706**). In other words, commonality between the electronic message and other electronic messages may be identified or content from selected fields may be

10  identified. Then, a rule is generated (step **708**). The rule is presented to the user (step **710**). Next, user input is received modifying and/or approving or disapproving the rule (step **712**).

Next, a determination is made as to whether the rule

15  was approved (step **714**). If the rule was approved, the rule is stored for use in filtering incoming mail (step **716**) with the process terminating thereafter. With reference again to step **714**, if the rule was not approved, the process terminates.

20  Turning back to step **704**, if other messages are not selected, then selected fields are identified (step **718**) with the process then proceeding to step **708** to generate a rule based on these identified fields.

Thus, the present invention provides a method,

25  apparatus, and computer implemented instructions for creating mail rules using existing electronic messages. The manipulation of the electronic message is used to identify the action to be taken. Future messages on which the action is to be taken is identified based on

30  comparing the electronic message to a criteria. The

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results of the comparison of the message to a criteria

may contain common content between the selected message

and other messages. Additionally, characteristics such

as the address and the subject are examples of other

5    characteristics that may be identified. Multiple

characteristics also may be used. For example, the

address of the sender and the date of the message may be

used to route or place messages into a particular folder.

Of course, other actions such as deleting messages and

10   forwarding messages, may be implemented in the rules

based on user actions manipulating an electronic message.

It is important to note that while the present

invention has been described in the context of a fully

functioning data processing system, those of ordinary

15   skill in the art will appreciate that the processes of

the present invention are capable of being distributed in

the form of a computer readable medium of instructions

and a variety of forms and that the present invention

applies equally regardless of the particular type of

20   signal bearing media actually used to carry out the

distribution. Examples of computer readable media

include recordable-type media such a floppy disc, a hard

disk drive, RAM, CD-ROMs, and transmission-type media

such as digital and analog communications links.

25   The description of the present invention has been

presented for purposes of illustration and description,

and is not intended to be exhaustive or limited to the

invention in the form disclosed. Many modifications and

variations will be apparent to those of ordinary skill in

30   the art. The embodiment was chosen and described in

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order to best explain the principles of the invention,
the practical application, and to enable others of
ordinary skill in the art to understand the invention for
various embodiments with various modifications as are
5   suited to the particular use contemplated.